

(19) World Intellectual Property  
Organization  
International Bureau



Rec'd PTO 29 APR 2005



(43) International Publication Date  
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number  
WO 2004/039862 A1

(51) International Patent Classification<sup>7</sup>: C08G 69/12,  
G02F 1/361

(IL). MEDVEDEV, Vladislav [IL/IL]; 8 Dr. Paizer Street,  
32806 Haifa (IL).

(21) International Application Number:  
PCT/IL2003/000898

(74) Agent: REINHOLD COHN AND PARTNERS; P.O.Box  
4060, 61040 Tel Aviv (IL).

(22) International Filing Date: 30 October 2003 (30.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/422,101 30 October 2002 (30.10.2002) US

(71) Applicant (for all designated States except US): TECH-  
NION RESEARCH AND DEVELOPMENT FOUN-  
DATION LTD. [IL/IL]; Technion City, 32000 Haifa (IL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): EICHEN, Yoav  
[IL/IL]; 20 Avigayil Street, 34674 Haifa (IL). SCHUS-  
TER, Gadi [IL/IL]; 15 Golomb Street, 36000 Tivon (IL);  
TESSLER, Nir [IL/IL]; 5 Bialik Street, 60900 Zichron  
Yaakov (IL). AMIHOOD, Doron [IL/IL]; 1 Calanit  
Street, 19323 Ahuzat Barak (IL). ZOLOTARIOV, Vadim  
[IL/IL]; 12 Bat Galim Avenue, 35012 Haifa (IL). TAL,  
Shay [IL/IL]; 12A Usishkin Street, 26324 Kiryat Motzkin

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

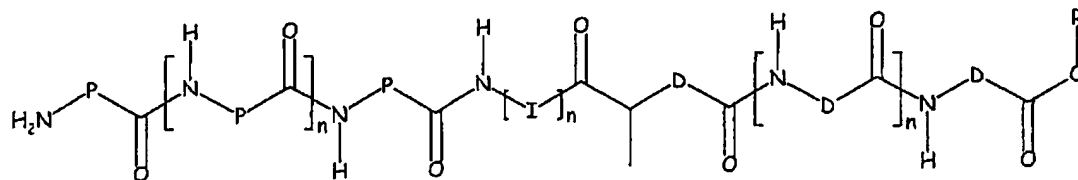
(84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: PI - CONJUGATED MOLECULES



22

(57) Abstract: The invention provides  $\pi$ -conjugated oligomers and polymers. The oligomers and polymers may comprise at least two  $\pi$ -conjugated amino acid subunits. The oligomers and polymers may contain one or more  $\pi$ -conjugated amino acid subunits that are optically, electrically or electronically active. The invention also provides optical, electronic and electric devices comprising oligomers and/or polymers having one or more  $\pi$ -conjugated amino acids that are optically, electrically, or electronically active.

WO 2004/039862 A1

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 C08G69/12 G02F1/361

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C08G G02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 0124, no. 53 (P-792), 29 November 1988 (1988-11-29) & JP 63 175838 A (NIPPON TELEGR & TELEPH CORP <NTT>; others: 01), 20 July 1988 (1988-07-20) abstract	1-27
A	DE 39 12 931 A (MERCK PATENT GMBH) 31 October 1990 (1990-10-31) claims 1-6	1-27
A	US 5 466 397 A (GULOTTY JR ROBERT J ET AL) 14 November 1995 (1995-11-14) claims 1-19	1-27
	----- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

6 February 2004

Date of mailing of the international search report

23/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Glanddier, A

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HEEGER ET AL.: "Semiconducting and Metallic Polymers: The fourth Generation of Polymeric Materials" ANGEWANDTE CHEMIE - INTERNATIONALE EDITION, vol. 40, 2001, pages 2591-2611, XP002269399 WEINHEIM cited in the application the whole document</p> <p>-----</p>	1-27

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 63175838		20-07-1988	NONE		
DE 3912931		31-10-1990	DE	3912931 A1	31-10-1990
			WO	9013055 A1	01-11-1990
			EP	0427815 A1	22-05-1991
			JP	3505598 T	05-12-1991
US 5466397		14-11-1995	NONE		